

REMARKS

Claims 1-10, all the claims pending in the application, stand rejected. Applicants have amended claims 1 and 2 in order to clarify the invention.

Drawings

The Examiner objects to the drawings as failing to comply with 37 C.F.R. § 1.84(p)(5) because they do not include certain reference signs mentioned in the description, specifically “2” and “3”. In this regard, Applicants note that these reference numerals are used in the specification at pages 1 and 2 with regard to Figs. 7 and 8, but that these figures use the reference numerals 2a, 2b, 3a and 3b. Since the description of the prior art at pages 1 and 2, with reference to Figs 7 and 8, refers to the numerals 2 and 3 as identifying a “first conductor” and a “second conductor,” respectively, Applicants have amended these figures in order to use appropriate reference numerals.

The drawings are also objected to as failing to comply with 37 C.F.R. § 1.84(p)(4) because the reference character “12” has been used to designate both an “insulation support” at page 1, line 28 and a “contact” as page 6, line 11. Similarly, the reference character 11 has been used to designated both a “first operating mechanism” at page 1, line 24 and a “contact” at page 5, line 24. The Examiner notes that there are additional reference numerals with similar dual uses in the drawings.

Upon Applicants’ review of the figures, it appears that the same numerals were used in the description of the prior art (Figs. 7 and 8) to describe structures that are different from those that apply to the invention (Figs. 1-6). This practice is confusing and, accordingly, Applicants have made an amendment to Figs. 7 and 8, using different reference numerals. In particular, Applicants now have adopted a technique of using a “100” series of numerals for the figures that illustrate the prior art. Thus, the tank in Fig. 7 (currently 1) has been given the numeral 101. Similarly the operating mechanism (currently 16) has been given a numeral 116. The first and second electrodes have been designated as 102 and 103. Applicants’ proposed amendment is submitted herewith. Appropriate amendments to the specification also have been made. No new matter has been added.

Amendment Under 1.111

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Finally, Applicants also note that the prior art figures 7 and 8 include numerals related to structures that are not defined or otherwise mentioned in the portion of the specification dealing with the prior art. In particular, elements 21a, 21b, 22, 23 and 24 are not mentioned in the text at pages 1 or 2. Thus, these pages have been rewritten (1) consistent with a change in the reference numerals for Figs. 7 and 8 and (2) in order to add a description of the structures related to structures 21a and 21b, and to remove reference numerals 22, 23 and 24 from the Figures as they are not necessary to understand the invention. Again, no new matter has been added.

Claim Objections

Claims 1 and 2 are objected to because claim 1, lines 15 and 16 recite “third electrode disposed to said tank”. The Examiner finds this ambiguous and requests that it be rephrased. Applicants have changed the language to read --third electrode disposed within said tank-- to reflect the structure of element 18 in Fig. 1. Similarly, claim 2, line 3, recites “substantially at right angles” and the Examiner asserts that it should be corrected to read --substantially right angles--. Appropriate changes to the claims have been made.

Claim Rejections - 35 U.S.C. § 103

Claims 1-10 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicants' admitted prior art [Figs. 7 and 8 of the present specification] in view of Furuta et al (6,538,224). This rejection is traversed for at least the following reasons.

The Admitted Prior Art

The Examiner notes that the Applicants admitted prior art in Figs. 7 and 8 disclose gas insulated switch gear having all of the limitations of the claimed invention except for the electrically insulating operating rod extending through the first fixed electrode in the direction of movement of the movable electrode. The Examiner looks to Furuta et al for disclosure of a gas insulation switch apparatus having an operating rod 25 that extends in the direction of movement of the movable electrode, as illustrated in Figs. 12 and 13. The Examiner concludes it would have been obvious to one having ordinary skill in the art to (1) place the operating rod 25 in the direction of movement of the movable electrode in the admitted prior art of Figs. 7 and 8 (2) to move the rod in the manner claimed, in order to disconnect the switch, as suggested by Furuta et al.

As disclosed in Figs. 7 and 8 of the present application, a movable contact 10, which is coupled to an operating mechanism 11, can move axially from a position in contact with a first fixed contact 7 to reach a second fixed contact 9 and bridge the gap between the two contacts, causing a connection, or to withdraw, thereby breaking the connection. The movable contact 10 is always touching at least the first fixed contact 7.

A separate grounding switch 5 is provided with a third fixed contact 13 and a second movable contact 15 is disposed such that it reaches to the third fixed contact 13 and bridges the gap between the third fixed contact 13 and a fourth fixed contact 14, and moves backwards to withdraw, thereby breaking the connection but always remaining in touch with the fourth fixed contact 14. A second operating mechanism 16 is used to move the bridging contact 15.

In short, the prior art of Figs. 7 and 8 require two separate operating mechanisms (11, 16) and two separate bridging contacts (10, 15) in order to operate the switch. These two mechanisms must be carefully coordinated to ensure safe operation.

Moreover, as explained at page 2, the prior art disconnectors for gas-insulated switchgears hold the electrodes at both the movable and fixed sides within the tank by insulation supports. Also, the grounding switch is fastened to the tank in the way in which a movable contact can move to be connected to the electrodes, leading to inefficiency and frequent adjustment within the tank, and checking of the connection between electrodes. Further, the prior art designs must have shaft seals, fastening flanges and operation devices for connecting the disconnector and the grounding switch separately to their respective operating mechanisms disposed outside the tank, thus making it difficult to omit such parts.

The Invention

The present invention solves these problems by using a single mechanism that operates a single insulated rod 14 and causes it to drive a single moveable contact 8 between grounded positions where a grounded contact 12 is coupled to a fixed contact 11 appended to the first conductor and between a second fixed contact 9 coupled to the first conductor and a fixed contact 10 that is coupled to the second conductor. This permits a single mechanism with a single bridging electrode to provide switchable coupling between first and second conductors in a gas insulated switch environment as well as grounding.

Furuta

The Examiner looks to Furuta for a teaching of a circuit breaker operating mechanism 28 that includes an operating rod 25 operated by the mechanism 28. As explained at col. 8, line 8 - col. 9, line 67 (particularly col. 9, line 50 -67), and at col. 13, beginning at line 6, the basic structure of the circuit breaker is disclosed. Specifically, a fixed electrode 21 can be moved by mechanism 28 into contact with a movable electrode 22 by operation of the operating mechanism via operating rod 25 and link 26. This is a simple open and close operation that pushes the movable electrode into contact with the fixed electrode.

There is no teaching or suggestion in this structure that would lead one of ordinary skill to modify the structure of Figs. 7 and 8, which contain two operating mechanisms, to satisfy two separate purposes. There is only one operating mechanism in Furuta et al, but that satisfies one purpose. Moreover, there is no teaching as to how that one purpose can be implemented in Figs 7 and 8, as an operation of both a grounding switch and a disconnector. The Examiner would be required to use hindsight to modify Figs 7 and 8. The second purpose of providing grounding and switching using a common bridging electrode is completely absent from Furuta and, consequently, there is no motivation or suggestion for modifying the prior art as shown.

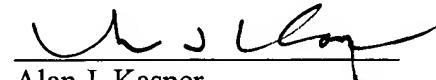
On the basis of the absence of such motivation, Applicants respectfully assert that this rejection is overcome.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Amendment Under 1.111
10/642,653

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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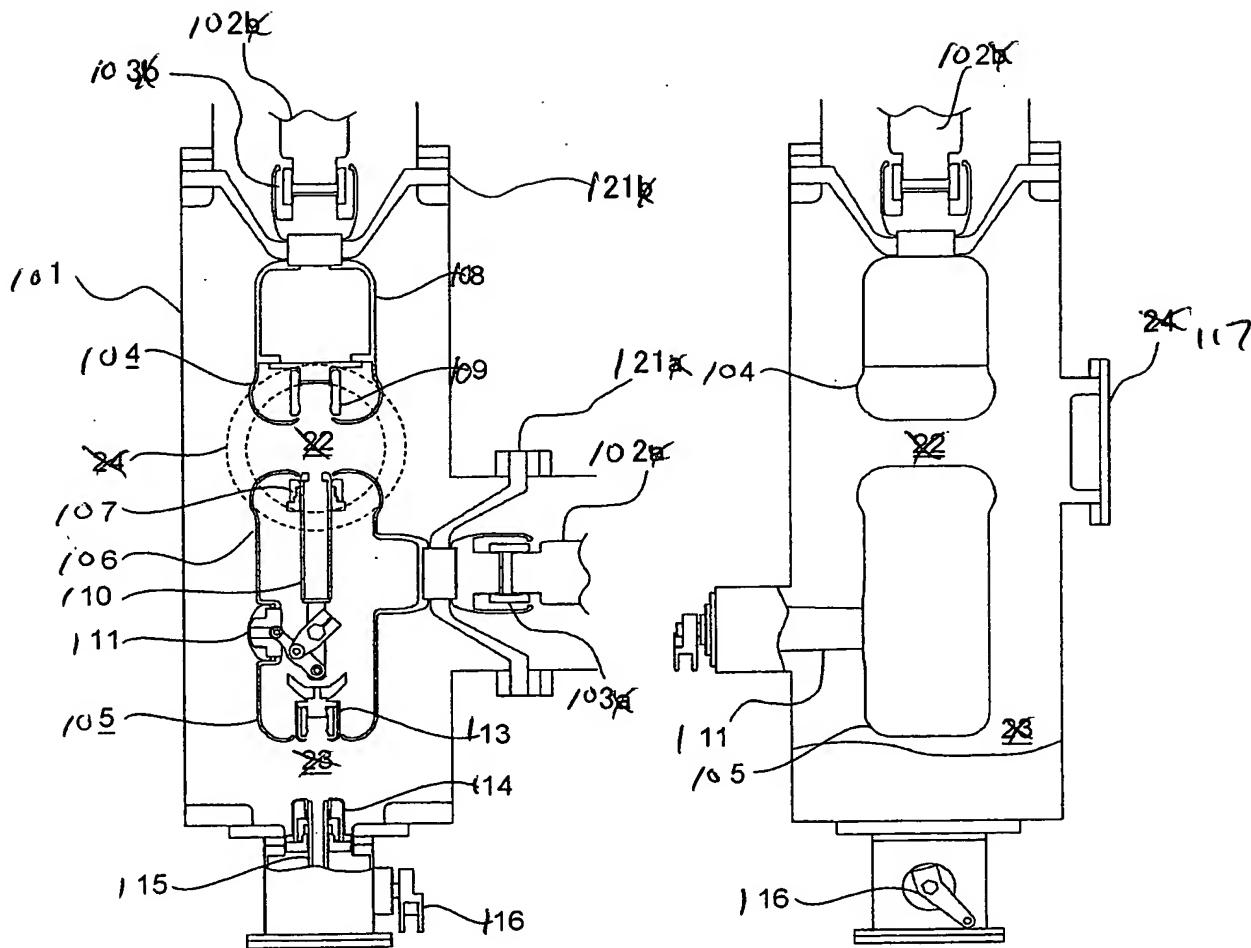


FIG. 7
PRIOR ART

FIG. 8
PRIOR ART